RISK MANAGEMENT IN REGIONAL URBAN PLANNING (case study Hunedoara County development plan - ROMANIA)

RADOSLAV RADU, BRANEA ANA-MARIA, DEMETRESCU BOGDAN, GAMAN MARIUS STELIAN
Faculty of Architecture “Politehnica”
University of Timisoara
Str. Traian Lalescu, no. 2, Timisoara,
ROMANIA
raduradoslav@gmail.com, anabranee@yahoo.com, bograndemetrescu@yahoo.com,
marius.gaman@yahoo.com

Abstract: - An uncontrolled development of a region (case study – Hunedoara County development plan) can lead to later on difficult to manage risks. Only through a balanced development of the ecological, social and economical aspects can sustainable development be achieved, which is one of the main points in the Leipzig Charter. A holistic territorial planning strategy involves identifying risk areas, evaluating them and their step by step mitigation using the local government means and private initiative.

Key-Words: - planning, holistic, mitigation, ecologic, social, economic, sustainable, regional urban planning

1 Introduction
Hunedoara County was the industrial jewel of the Romanian 50-70’s social-economic system. Its peak was reached during the forced industrialization, brought upon by soviet concepts, through the building of the iron and steel works in Hunedoara and its auxiliary adjacent industries. This forced growth suddenly stopped after 1989 once the economy switched to the free market leaving behind an ecological, social and economical disaster.

The present article is based on data from the PATJ (County development plan) Hunedoara created by the Research Centre for Sustainable Development, “Politehnica” University of Timisoara, which also contains the county’s development and mitigation strategy for the next 5 to 10 years.

2 Current situation
To achieve Hunedoara County’s sustainable development it is necessary to act on all three composing levels, namely ecologic, social and economic.[1]

It is worthy of note that on the territory in question can be found remarkable natural and built preserves. Through the analysis of various individual aspects (floods, landslides, pollution, natural and built reserves, accessibility, utilities, economic resources, standard of living, number of annual births and deaths, etc. ) conclusions arise which need to be intergraded in the final strategy as the lead to logical, natural ways to rectify problems. The entire territory is analysed, in our study, layer by layer, as follows.

2.1 Ecologic
These phenomena produce landscape chances as a result of the interaction between various natural or man-made factors: geological, climatic, hydrological, seismic to which social-economical ones join.

2.1.1 Natural hazards
2.1.1.1 Landslides
In Hunedoara County landslides occur due to a very fragmented relief, a soft rock geological structure and a favourable litological structure.[2]

The most recently affected areas – due to periodical reactivations – are: Deva, Geoagiu, Ilia, Hațeg, Petrișa, Hunedoara, Lupeni, Brad. Landslides have a major...
effect on traffic blocking county and communal roads for various distances and cutting of farms or even cities. They can affect both the natural and the man-made relief, namely refuse-heaps.

2.1.1.2 Floods
The sudden melting of the snow cover (laid down in considerable quantities in January and February) and water discharge from slopes leads to a sudden increase in river levels, exceeding defence limits, which creates the phenomenon spring tide, short-term high-water floods, generally from April to May, at the mouths of streams, gills and small rivers, locations usually occupied by villages. Almost every spring, settlements in the drainage areas Mures, Cris and Jiu are in this situation. As the majority of Hunedoara County’s settlements are in such valleys their administrative area and developments comprise flooded areas.

2.1.2 Man-caused hazards
The most important human interventions on the natural environment in Hunedoara County are surface and under-ground mining activities in Valea Juiului, Deva-Certeje, and Brad and industry based ones. Mining leases are critical areas even though their activity has chased and their ecological rehabilitation has already begun.
2.1.2.1 Industry
The industry’s impact on the natural environment includes soil degradation, fall in underground water quality, negative effect on aquatic flora and fauna, air pollution and acid rain. Its impact on the quality of life is not only the inability to use river banks for recreation (waste water effuse) and near bay land for agriculture due to contamination, but also the aesthetic impact on the landscape. Steam power plants have a major negative effect on all environmental aspects, air, soil and water, taking into account the complexity of the buildings and equipment, the raw materials and resulted waste and the occupied surfaces.

2.1.2.2 Refuse-heaps and skimming ponds
Over 9000 ha of Hunedoara County’s territory is occupied with refuse-heaps, skimming ponds and industry affected areas (steal works and energy production). This represents a potential danger for ecological hazards considering the possibility of refuse heap slope destabilisation, incontrollable pollutants emissions in the surrounding environment, geotechnical failure at skimming ponds, which could lead to contaminated water inrush and devastating ecological effects.

2.1.2.3 Scrap heap
At present in Hunedoara County are 13 inadequate class B, waste deposits in the urban areas and 9 in the communal ones. Every village has an unauthorised scrap heap, their surface totalling 46 ha. All, including rural ones, will soon cease activity or have already done so.

2.1.2.4 Hydro-energetic power plants
Despite producing clean energy, and they themselves not polluting, hydro-energetic plants have a complex effect on the surrounding environment. Besides occupying considerable agricultural and woodland areas, entire villages’ displacements are sometimes necessary and once built they lead to changes in local bio-diversity, bio-climate and water cycle in nature.

2.2 Social
2.2.1 Vital statistics (depopulation, emigration)
In 1977 Hunedoara County had a population of 514413, on the basis of an important industrial development and consequently an internal migration increase in 1992 it reached 547900. After the collapse of the social economic system mass layoffs and emigrations caused a population decrease to 485712 in 2002 and 470103 in 2008. Out of the 68 of Hunedoara County’s districts 7 are affected by a depopulation of over 50% and 19 of over 30%.
2.2.2 Degree of education
In Hunedoara County only 5.9% of the population have a bachelor degree, 6% lower than the national average, 34.1% a high school degree, 19% a vocational one while 25.1% of the population have only attended secondary school and 16.6% primary school. Besides a low average degree of education, with over 40% of the population having attended only 8 years of school, the number of pupils drops every year, to be exact 20000 fewer than 10 years ago.

2.2.3 Degree of wealth
18 of the county’s districts are under the national wealth average (Valisoara, Lapugi de Jos, Burjuc, Vorta, Lunca Cernii de Jos,Vata de Jos, Burjuc, Zam, Dobra, Batrana, Cerbal, Rachitova, Romos, Rapoltul Mare, Certejul de Sus, Baita, Criscior, Geoagiu). Their placement on the Eastern and Western County border breaks the traditional county division in three parts, North, Centre and South, and it can be clearly noticed that they are the same districts affected by depopulation, lack of accessibility and utilities.

2.2.4 Unemployment
Unemployment rates dropped in the past years, from 21265 in 2002 to 10087 in 2007. In 2002, in Hunedoara County, just 33.7% of the population was employed, the rest of 10.3% unemployed, 7.5% under the care of others, 2% under state or ONG care and 17% under 16 years old. In the past 10 years the number of employees dropped by over 25000 even though, on the one hand, the majority of layoffs in Hunedoara had already been done, the number dropping there by only 5000, and on the other hand, Deva experiencing an increase of over 10000. These phenomena led to a decrease of social diversity, sociability, community involvement in the decision making process and local security.

2.3 Economy
2.3.1 Agriculture
Although at first sight agriculture and forestry may seem important sectors of the Hunedoara County’s economy, taking into consideration only hard factual data it represents just 4% of the total income for services and productive sectors. From 2005 to 2007 forestry and lumbering produced over 50% of the total agricultural economical sector.
2.3.2 Industry
Most of the county’s income comes from industry, to which major contributors are mining and metallurgy. A great part is also represented by electricity production, forestry and lumbering, construction materials, light industry and the food industry. These types of industries have high running costs, low services, no flexibility to the lack of the financial structures capable of refining production.

2.3.3 Services - tourism
Hunedoara County has a substantial untapped tourism potential, mainly with a mountain-natural character but also with important folk and cultural aspects, old churches, historical monuments, archaeological sites.

3 Risk mitigation through territorial urban planning
To attain sustainable development it is necessary to apply measures according to a holistic vision and have a balanced approach on its all three aspects ecological, economical and social. Ecologically speaking the measures can be either active or passive.

3.1 Landslides – building ban and reforestations
Passive prevention measures could be establishing no building zones on affected areas that have not yet been built-up or even excluding them from the administrative territory. Active measures are slope reinforcing and anchorage forestation in areas in which such an investment is economically viable.

3.2 Floods – banking and polders
On the one hand active measures are necessary in areas where human lives or material goods are at risk, thus dams, river training and retaining walls are proposed to be built on the rivers Mures, Cerna, Sibisel, Geoagiu, Jiul de Vest and on some of their tributary streams. Another active measure would be creating retention ponds, having the double function of large urban parks, outside the administrative territory, for example the ones proposed for the city of Deva [3], and also preventing floods downstream by retaining excess water.

3.3 Industry
It is important to down scale industrial production and re-orientate the county’s industry on natural reserves such as berries, medicinal plants and fishing. The only viable economical development strategy is focusing on tourism, mainly mountain related (biking, hiking, winter sports), natural preserves, eco-tourism but also cultural tourism (religious heritage and historical monuments). Neither type of tourism can evolve unless it relays on an important adjacent services structure be it commercial, food, housing or transportation infrastructure.

3.4 Refuse heaps - capitalization and protection through forestation
The remaining functional industry units would undergo modernization to be brought up to ecological impact standards. However their effects are long term and the refuse heaps also need greening measures.
3.5 Scrap heap - proposals
Currently all the urban scrap heaps are undergoing a process of closing down, greening, and assumption of duties by new selective collective centres, transfer and depositing stations at the county level, dividing it in scrap catch basins.

3.6 Hydro-energetic power plants
Landscape developments for hydro-energetic plants not only act as major retaining basins, preventing floods but also provide the means for a clean source of energy and new tourism potential.

4 Conclusion
Applying this risk management measures from the risk and opportunity [4] development strategy a step by step mitigation of the social-economical-ecological situation is achieved. Without gradually improving all aspects: social, which brings social diversity, accessibility, identity, security, variety, involvement, sociability, aesthetical; economical which can be realised by cutting revenue expenditure, improving function, diversifying activities and adjacent financial structures, services, communications, management, flexibility; ecologic through a more harmonious use of land, biodiversity, bio-climate, producing non-pollutant energy, re-naturalising the water cycle, recycling, adequate accessibility, improved overall health, regional sustainable development cannot be achieved and therefore neither that of each city, community, neighbourhood and citizen.

References:

[2] PATJ HD project realized in the Research Group for Sustainable Development in the “Politehnica” University of Timisoara, Faculty of Architecture, , author project manager arh Radu Radoslav, co-author stud arh Ana Branea, stud arh Marius Gâman.
